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TO L. E. Root

FROM

SUBJECT WS117L SECURITY

February 2, 1959

Because of the importance of the WS-117L and the security of this program, I thought I should write you an IDC on this subject. I feel that both Air Force and our own interests in the security aspects of this program require a general tightening up. Particularly in this connection, articles which appear in news media referring to WS-117L cause me continuing concern. While I recognize that we are not responsible for, nor can we control, the skillful, speculative probing of good technical reporters, we must nevertheless do our very best to prevent the exposure of the highly sensitive projects in which we are engaged. In this connection, one of the most alarming aspects is the frequency with which speculation appears relative to "Sky Spies." Since it has now been released openly that the Thor-boosted portion of our program (now called DISCOVERER) is oriented to serve other valid objective, it appears that our security problem can be divided into two portions which may make their solution somewhat easier.

As you and a limited number of other people are aware, there are some payloads in the DISCOVERER program which are quite sensitive and have to do with the military exploitation of space capabilities for objectives other than reconnaissance. We need to bear continuously in mind that we and the Air Force run the risk of having the DISCOVERER program drastically interfered with or reduced if idle speculation causes apprehension by those who have authorized the sensitive payloads that their real purpose may be politically unachievable through association in the public mind with a reconnaissance objective.

As to the SENTRY series, it is commonly accepted by the news media (although without official basis) that its purpose is reconnaissance. Your key people should recognize that the security problems surrounding the Nation's first reconnaissance efforts with satellites are not only military but political. Even though we may have a technically perfected system, we may not be permitted to use it if idle speculation has aroused public sentiment in this country and abroad to the extent that its use will appear as a threatening and unpeaceful gesture. Most press speculation cultivates such fear. It is, therefore, incumbent upon us that we be more than usually careful in security provisions applicable to our SENTRY payloads.

The above thoughts are important to us at Lockheed not only from a national interest point of view but also for strictly corporate reasons. We can be proud of our performance in the past relative to especially secure programs. We wish to cultivate to the maximum extent possible a reputation for handling such programs with the greatest discretion and with a maximum degree of real security. As you know, this is a difficult thing to do in the aviation industry and a reputation of this kind will be relatively unique and will aid us in further work of any kind requiring these qualifications.

Mr. L. E. Root

January 29, 1959

Subject: WSLI/L SECURITY

Will you insure that these cautions are passed on to the key personnel in IMSD.
I, in turn, will make the situation clear to others involved at the corporate
level.

/s/

[Redacted Signature]

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IMSD Distribution

[Redacted]

- D/10-01, Ext. 2596 - 2/6/59

[Redacted]

S E C R E T

FOR RELEASE THURSDAY, FEBRUARY 12

SUNNYVALE, Calif. -- A tiny battery-powered television system, weighing only 9 pounds yet rugged enough to withstand the crushing forces of being rocketed into space, was unveiled today at the Lockheed Missiles and Space division here.

The entire system consisting of a camera and three small units which easily fit into a brief case, has a 1000-mile transmitting range and its picture transmission quality compares with commercial TV cameras and transmitting stations.

The camera itself is only 7 and three-quarter inches long by 2 and one-quarter inches in diameter and weighs a mere 42 ounces, including lens. Samuel Schwartz, Lockheed research scientist, has patent applications on portions of the electronic design of the miniaturized system. Initial development of the system was headed by Nicholas K. Marshall, research scientist.

First units of the electronic masterpiece already have been delivered to the Army Ballistic Missile Agency. Lockheed pointed out that the TV system was not developed for any satellite program.

The intriguing piece of space-age hardware was exhibited for the first time today when the missile division gave the press a look at some of the advanced scientific research in which it is engaged at its main plant here and at its large Scientific Research Laboratory in nearby Palo Alto.

In explaining some of the division's advanced research work, General Manager L. Eugene Root noted that the division last month

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changed its name to the Missiles and Space division in "timely recognition of the permanent importance of space activity to our operations". (The former name was the Missile Systems division.)

"In our current planning," he said, "we have listed numerous programs as most desirable for LMSD from all aspects of its operations.

"Some 60 percent of these," he said, "are for projects in the space area. Of a large number of proposals submitted by the division in recent months about half have been for space projects."

More than 1900 Lockheed scientists and technicians, including 170 with doctors' degrees, are engaged in advanced research such as nuclear physics, space physics, ionic physics, magnetohydrodynamics, cryogenics, gas dynamics, electronics, metallurgy, infrared, space communications, chemistry, propulsion, and flight sciences.

The Lockheed-developed TV system includes, besides the camera, the fully transistorized control unit, weighing 42 ounces and which supplies all necessary sweep and synchronizing signals to the camera; a 14-ounce unit containing camera controls, and a 50-watt FM transmitter weighing 47 ounces.

The system, powered by a 28-volt dry cell battery, has passed the most rigorous testing, including 40 Gs of shock (40 times the force of gravity), 50 Gs of acceleration and 10 Gs of vibration. Fifty Gs has been likened to the force produced by a jet plane smashing into a concrete wall at 1100 miles an hour.

Daniel Hochman, head of the electrical design department which produced the system, said it has a variety of possible applications in the missile field.

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"For instance," he said, "it would be possible to see a missile's performance after it was launched and disappeared from sight of ground observers. On a monitor at the ground station you would actually be able to look at such critical things as a stage separation or engine firing.

Another possible application, Hochman said, would be train the camera on passengers in a spacecraft to observe how they withstand the severe environment in the critical periods during and after launch.

Commercial potentials mentioned by Hochman could be in the fields of aerial navigation, meteorology, oceanography, railroading, observation of radioactive or similarly contaminated areas, and law enforcement, as well as television news coverage.

Besides its compactness, ruggedness and its adaptability, it has a picture resolution capability of 500 lines -- a photographic measure which indicates picture clarity. This is far superior to the picture quality of the average home TV receiver.

Hochman also demonstrated Lockheed's advanced telemetry equipment known as the pulse amplitude modulation-frequency modulation system.

Its advantages over existing FM-FM systems, he said, include more versatility, higher fidelity and increased range with the same transmitter power.

Other examples witnessed by the press of man's efforts to ferret out cosmic secrets through laboratory experiments was one which exploded a blast of air through a large tunnel simulating the super velocities and temperatures of missile flight through the atmosphere.

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How infrared or invisible light can be used as an early warning alert against enemy missiles was demonstrated in the modern infrared laboratory. A simple demonstration arranged by the Lockheed scientists was to train an infrared radiometer on a lighted cigaret some 80 feet distant to show its sensitivity to heat. This highly promising technique makes it possible to detect the heat emitted by a rocket engine of an enemy ICBM at great distances.

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